

# Successful transitioning onto winter crops for efficient BCS gain: the Pastoral 21 experience

**A critical factor in achieving profitable winter grazing and targeted Body Condition Score (BCS) gain is the efficient transitioning of cows on to crop. Successful transitioning will result in improved animal health, milk production, and in calf rates.**

The Pastoral 21 (P21) project reviewed BCS gain achieved during transitioning and winter grazing on to fodder beet and two treatments of kale crops over three winters. The project found that BCS can be maintained for the majority of the herd during transition and BCS gains of 0.7 can be achieved on all crops when combining a good transition plan and sufficient feeding during the rest of winter.

## Key points

### Project results

- With a good transition plan, the majority (86%) of cows will either maintain or increase in condition over the transition period
- Over 60 days on winter crops a 0.7 increase in BCS was achieved, by offering 14 to 17 kg DM or an ME intake of between 150 and 165 MJ/cow/day.

### Management recommendations based on good practice and trial experience

- Create a transition plan early; use a check list to ensure nothing is missed
- Successful transitioning onto winter crop requires tight management of allocation, especially with fodder beet
- Poor transitioning increases the risk of cow health issues such as acidosis and nitrate poisoning
- Poor transitioning decreases the days available to gain body condition before calving.

## Managing transitioning during the P21 project

### A transition plan was created early

This started with selection of paddocks and deciding planting direction of crops. The detailed plan began in early April, working backwards from moving day to dry-off.

The P21 transition plan considered the following nine points.

#### 1. Shape of paddock

The paddocks used were rectangular in shape and therefore easy to set up for accurate crop allocation and paddock access.

#### 2. Planting direction

It is more accurate and easier to use fodder beet rows for allocation rather than working on a square metre/cow allocation method. Grazing was parallel with rows, allocating rows or part rows per grazing to meet DM allocations.

#### 3. Crop type

There are different risks to identify and manage during transitioning.

Fodder beet has a higher risk of animal health issues during transition; therefore a longer transition period of 14 days was used, while the kale transition period was 8 days.

#### 4. Get an accurate crop yield for crop allocation

Crop yields were measured in the area to be used for transitioning and then fortnightly through winter, to ensure accurate crop DM allocation.

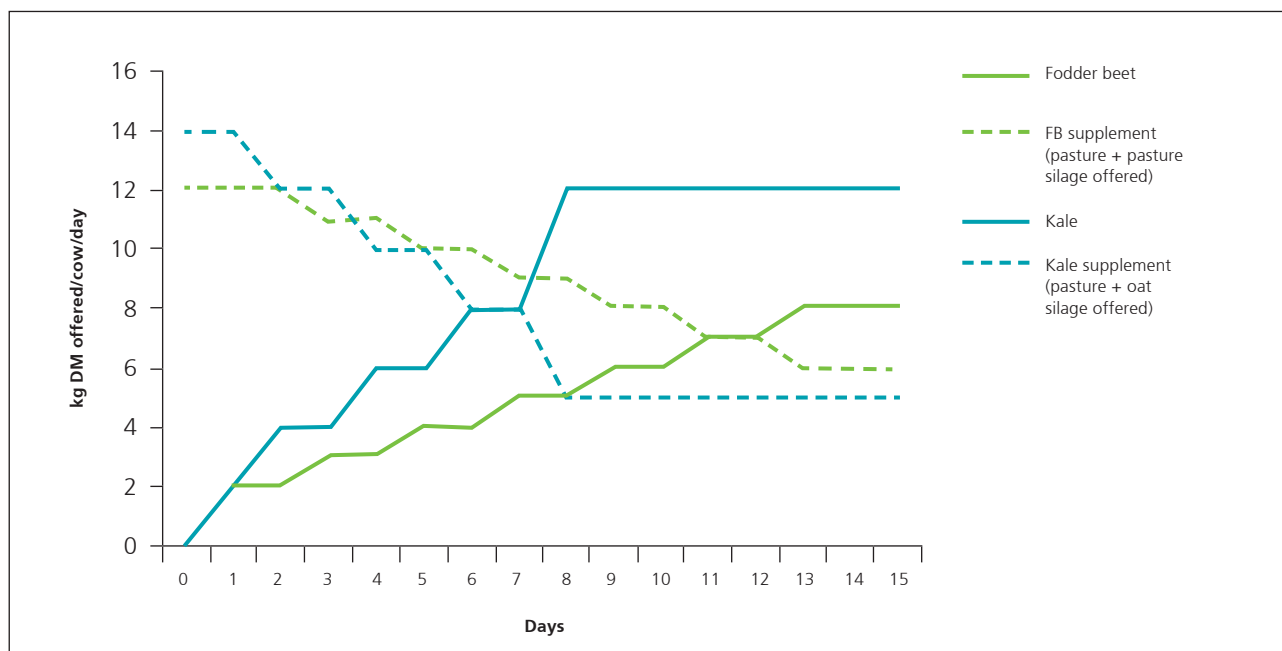
#### 5. Crop to supplement ratio

Sufficient supplement and/or pasture needs to be offered during the transitioning period to avoid BCS loss. Two approaches were used, one transitioning on the winter block and one on the milking platform, in both approaches the protocol was to gradually reduce supplement and pasture allocations, with increasing crop allocations (Figure 1). By offering a high total intake, cows that did not take to crop quickly were less likely to lose condition.

Once the transitioning period was complete cows were offered a DM allocation total of 14kg DM (fodder beet) and 17kg DM (kale), made up of crop and supplement.

If cows showed signs of clinical acidosis they were removed from the crop, checked, treated if required and offered pasture and silage until they recovered when they were re-introduced to the fodder beet.

Figure 1: Crop vs supplement offered during transitioning.



Note: The allocation of fodder beet increased by 0.5 kg DM/cow/day, whereas kale increased by 1kg DM/cow/day.

**Fodder beet:** After drying cows off for a week on the milking platform, two different approaches in transitioning to fodder beet were used over the three winters of the project.

i. Transitioning on the winter grazing block

After arriving on the winter grazing block, cows were allocated increasing areas of fodder beet based on measured yields. Fodder beet allocation was increased by 0.5kg DM/cow/day, with the remainder of total allocation in pasture and 6kg grass silage. This resulted in a final allocation of 8kg fodder beet plus 6kg grass silage at day 14 of transition.

ii. Start transitioning on the milking platform

Fodder beet was lifted and fed on pasture until there was sufficient area for the cows and the daily allocation was 5kg DM/cow/day. Cows then moved to grazing in situ and daily allocation continued to increase to the target level (8kg DM). The cows finished this paddock of fodder beet on the milking platform before being transported to the support block for the remainder of the winter.

**Kale:** Cows were transitioned onto kale over an 8 day period by increasing kale allocation 1kg DM/cow/day with the remainder fed as pasture and green chop oat baleage or barley straw. The final allocations being; no pasture, 12kg/DM late sown kale plus 5kg green chop oat baleage, or 14kg DM early sown kale plus 3kg barley straw (not shown in the graph above).

## 6. Utilisation

During transitioning it is important that the cows eat the tops and roots of fodder beet together, to help maintain crude protein (CP) intake and reduce animal health issues. The P21 project achieved this by using long narrow breaks and setting up the wire so cows had to reach under the wire to access the beet. This approach limited the amount of crop they could access at any one time (to achieve accurate allocations) and reduced wastage by minimising trampling of the crop. There was also a second wire (catch fence) to ensure that the risks associated with any “breakouts” were minimised.

## 7. Cow status

Best practice was followed when drying off and transporting animals. The P21 cows were dried off at least a week before transporting to the support

block. Cows were allocated pasture and supplement on the day of arrival and transitioning to crop commenced the following day once they had settled. When cows had been transitioned onto fodder beet on the milking platform they received their full crop allocation on the day of transporting.

## 8. Transitioning naïve animals

The P21 project encouraged naïve animals to eat fodder beet by, kicking some out of the ground and chopping or slicing through them with a spade in the rows. This resulted in all cows eating the fodder beet within a week of commencing transitioning. No issues were encountered with transitioning onto kale.

## 9. Mob management

The P21 project considered mob structure (MA cows and R2's), when calculating allocations and developing the grazing plan. Due to the small size of the herds, the P21 farmlet trial had R2's and MA cows grazing together. The R2's were introduced to the herd after dry off and prior to the commencement of transitioning onto the crop. This was to give the herd as much time as possible to establish their social rankings.

There are a number of factors to consider for smooth transitioning. Refer to the Available resources section at the end of this document to more information.

## *P21 Canterbury wintering on crops: research results*

This project reviewed the data gathered from the P21 Sequence cropping experiment to quantify the effect of crop transitioning management on BCS gain in cows offered fodder beet or kale.

The project was conducted on Balmoral/Lismore stony silt loam soils at Lincoln University's Ashley Dene research farm, under summer irrigation. Allocation of crop, pasture and supplement ratios changed over the transition period in line with recommended practice (Table 1).

The results were gathered over three winter's comparing early grown kale crop, late grown kale crop and fodder beet crop (Table 2).

**Table 1:** Annual yield (t DM/ha) of crops grown in a kale-only, or a sequence cropping system.

Crop	Fodder beet (pasture silage)	Early Kale (barley straw)	Late Kale (oat baleage)
Transition (days)	14	8	8
Crop offered day 1 (kg DM/cow/day)	2	4	4
Supplement offered day 1 (kg DM/cow/day)	6	3	5
Pasture offered day 1 (kg DM/cow/day)	6	9	7
Crop increase (kg DM/cow/day offered)	0.5	1	1

### Transitioning period

The project found that using good practice when transitioning to winter crop, resulted in the majority (86%) of cows maintaining or increasing in BCS over the transitioning period (Table 2).

**Table 2:** BCS change during the transition period for cows offered fodder beet, early and late sown kale crops with supplement.

Crop	Fodder beet (pasture silage)	Early Kale (barley straw)	Late Kale (oat baleage)
Drop in BCS (- 0.5 change (%))*	13%	15%	13%
No BCS (0 change (%))*	68%	63%	71%
Increase in BCS (+ 0.5 change (%))*	18%	21%	17%

\*BCS changes measured during the transition period for each crop

### Winter period

The fodder beet crop was higher in ME than the kale crops and there was a difference in the ME and utilisation of the supplements between the wintering treatments (Table 3).

**Table 3:** Targeted intakes and crop and supplement quality information for cows offered fodder beet and kale during winter.

Crop	Fodder beet (pasture silage)	Early Kale (barley straw)	Late Kale (oat baleage)
Crop offered (kg DM/cow/day)	8	14	12
Supplement offered (kg DM/cow/day)	6	3	5
Crop utilisation (%)	95	90	80
Supplement utilisation (%)	86	50	65
Crop DM%	14.7	14.3	12.9
Supplement DM%	47.0	64.0	37.5
Crop ME (MJ/kg DM)	13.7	12.5	12.6
Supplement ME (MJ/kg DM)	10.9	7.1	8.2

Treatment groups were offered between 14 and 17kg DM/cow/day resulting in an ME intake of about 160 MJ/cow/day (Table 4). This ME intake is higher than previous dry cow recommendations of 120 MJME/day, but was necessary to achieve the targeted BCS gain.

**Table 4:** Dry matter and metabolisable energy intake of cows offered either fodder beet or kale during the winter period.

Crop	Fodder beet (pasture silage)	Early Kale (barley straw)	Late Kale (oat baleage)
Intake (kg DM/cow/day)	13.1	13.6	13.3
ME (MJME)	165	162	153

The average live weight of mature cows in all treatments was 510kg and they achieved a BCS gain exceeding 0.5 BCS units, with no significant difference in herd averages for the different forage treatments (Table 5). However, the fodder beet treatment had less cows below BCS 5.0 at the end of winter.

**Table 5:** Herd average BCS gain and percentage of cows below pre-calving targets for cows offered fodder beet and kale during winter.

Crop	Fodder beet (pasture silage)	Early Kale (barley straw)	Late Kale (oat baleage)
BCS gain (60 days)	0.74	0.66	0.71
% herd below 5 day 0	88	86	87
% herd below 5 end of July	8	17	14

## Available resources

DairyNZ website resources ([dairynz.co.nz](http://dairynz.co.nz)):

- BCS tracker App
- Body condition scoring made easy: The official field guide
- DairyNZ Body condition scoring: The reference guide for New Zealand Farmers
- Feeding winter brassica crops to dairy cows (1-75)
- Fodder beet: feeding dairy cows (1-73)
- Transitioning cows onto crops; Southern Wintering systems fact sheet

Winter crop allocation calculator: [dairynz.co.nz/feed/feed-management-tools/more-feed-tools/](http://dairynz.co.nz/feed/feed-management-tools/more-feed-tools/)

## References

Edwards GR, deRuiter JM, Dalley DE, Pinxterhuis JB, Cameron KC, Bryant RH, Di HJ, Malcolm BJ, Chapman DF (2014) Dry matter intake and body condition score change of dairy cows grazing fodder beet, kale and kale-oat forage systems in winter. *Journal of New Zealand Grasslands* **76**, 81-87.

## Acknowledgements

This research was funded by the Pastoral 21 programme, a collaborative venture between DairyNZ, Fonterra, Dairy Companies Association of New Zealand, Beef + Lamb NZ and the Ministry of Business, Innovation and Employment. The support of Lincoln University and DairyNZ research staff is also gratefully acknowledged.

The primary research provider in this trial was Lincoln University.

